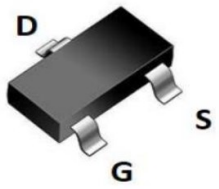
60V N-Channel Power MOSFET

DESCRIPTION：
- Excellent $R_{DS(ON)}$, and Low Gate Charge.
- Halogen-free; RoHS-compliant
- Pb-free plating

V_{DSS}	60V
I_D @V_{GS}=10V	0.6A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	870mΩ

TYPICAL APPLICATIONS：
- Load Switch
- PWM Application
- Power Management



SOT-23

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	0.6 0.4	A
Pulsed Drain Current		I_{DM}	Refer to Fig.4	A
Power dissipation	Tc=25℃ Tc=100℃	P_D	0.9 0.4	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	135	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	60			V
Zero Gate Voltage Drain Current VDS = 60 V, VGS = 0 V	I_{DSS}			1.0	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±10	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	0.9	1.3	1.6	V
Drain-Source On-State Resistance VGS = 10V, ID = 0.3A VGS = 4.5V, ID = 0.2A	$R_{DS(on)}$		870 944	1131 1227	mΩ
Input capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{iss}		36	55	pF
Output capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{oss}		5.9		pF
Reverse transfer capacitance f=1MHz, VDS=30 V, VGS=0 V	C_{rss}		2.2		pF
Gate Resistance VGS = 0V, VDS= 0V, f = 1MHz	R_G		8.3		Ω
Total Gate Charge VDS= 30V, ID= 1A, VGS= 0 to 10V	Q_G		1.6		nC
Gate to Source Charge VDS= 30V, ID= 1A, VGS= 0 to 10V	Q_{GS}		0.4		nC
Gate to Drain Charge VDS= 30V, ID= 1A, VGS= 0 to 10V	Q_{GD}		0.2		nC
Turn-on delay time VDS= 30V, VGS= 10V, ID= 0.3A, R_{GEN}=3Ω	$td_{(ON)}$		0.7		ns
Rise time VDS= 30V, VGS= 10V, ID= 0.3A, R_{GEN}=3Ω	tr		2.4		ns
Turn-off delay time VDS= 30V, VGS= 10V, ID= 0.3A, R_{GEN}=3Ω	$td_{(OFF)}$		5.9		ns
Fall time VDS= 30V, VGS= 10V, ID= 0.3A, R_{GEN}=3Ω	tf		9.2		ns
Revers Recovery Time IF=1A, di/dt = 100A/us	Trr		16		ns
Revers Recovery Charge IF=1A, di/dt = 100A/us	Qrr		7.5		nC
Maximum Pulsed Body Diode Forward Current	IS			0.6	A
Maximum Pulsed Body Diode Forward Current	ISM			2.5	A
Diode Forward Voltage VGS = 0V, I_S = 0.3A	V_{SD}			1.2	V

Typical Performance Characteristics

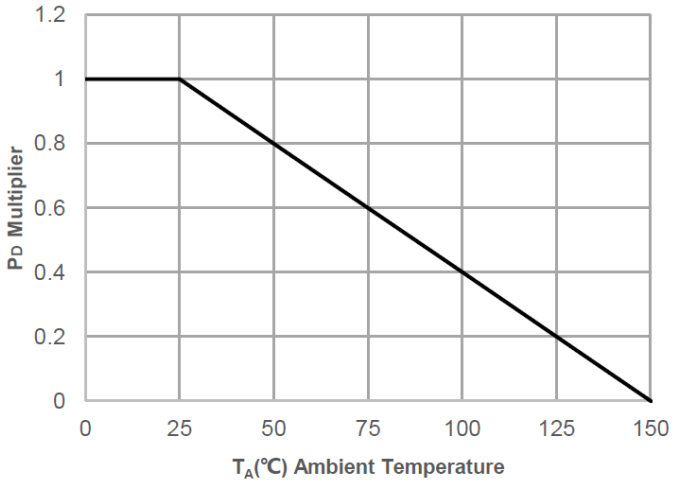


Figure 1. Power De-rating

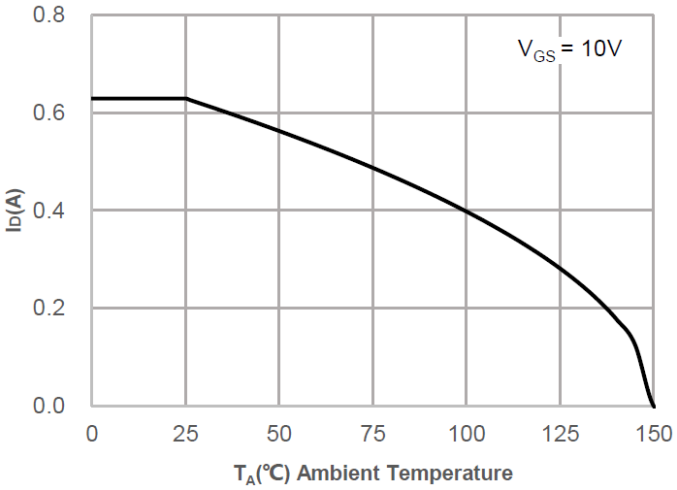


Figure 2. Current De-rating

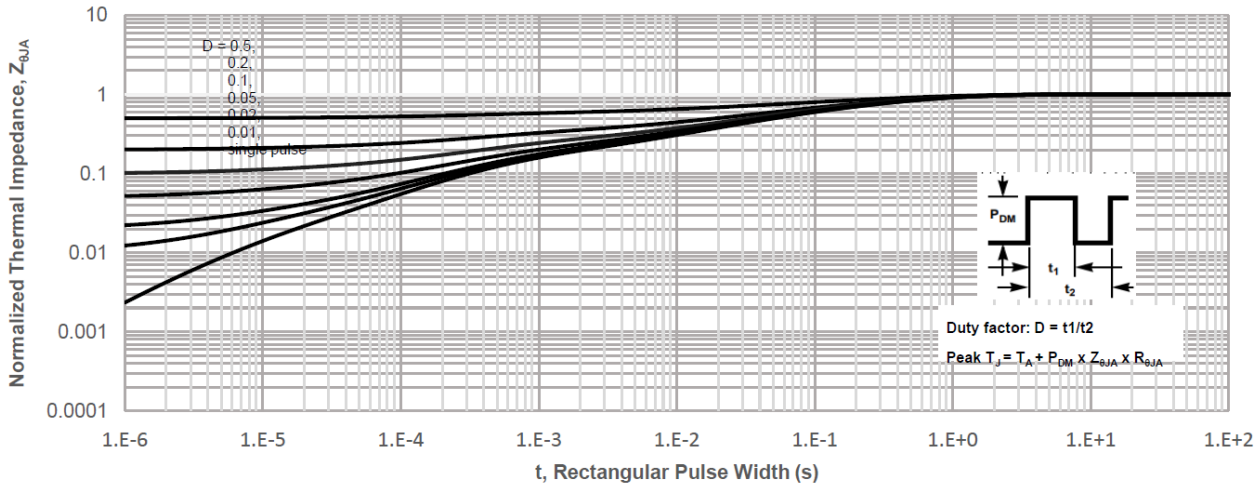


Figure 3. Normalized Maximum Transient Thermal Impedance

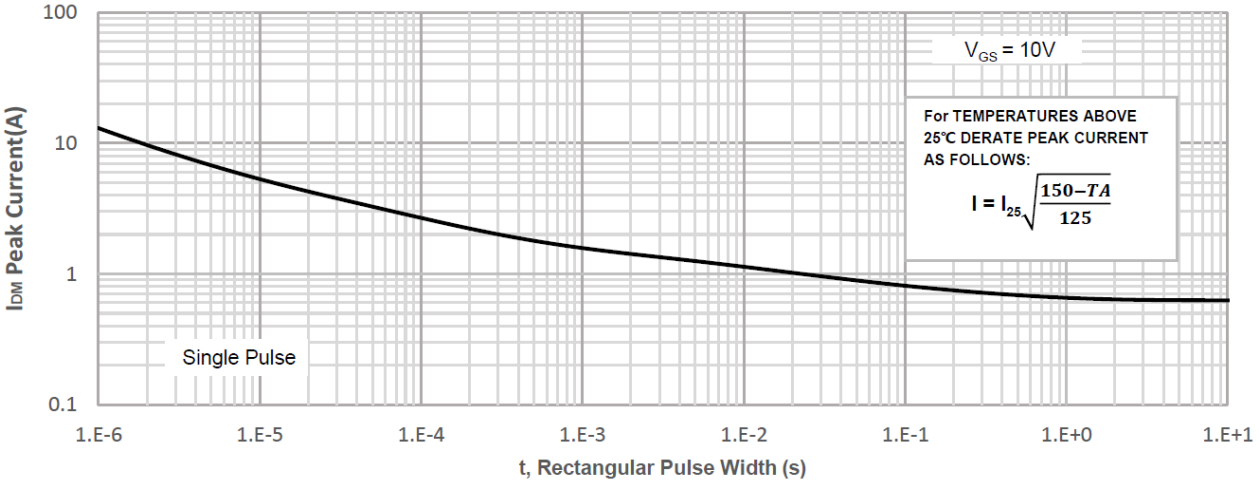


Figure 4. Peak Current Capacity

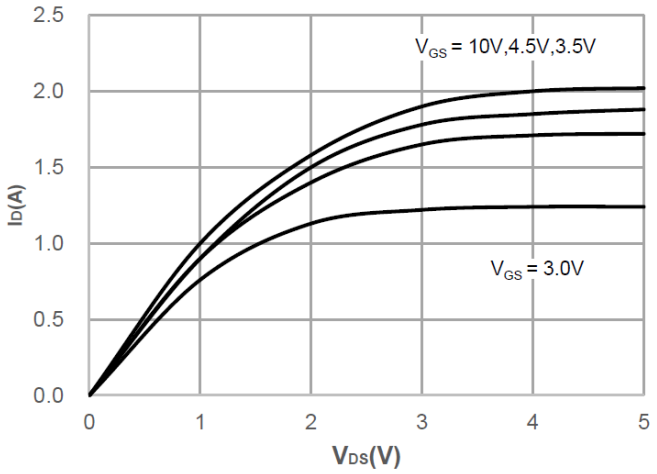


Figure 5. Output Characteristics

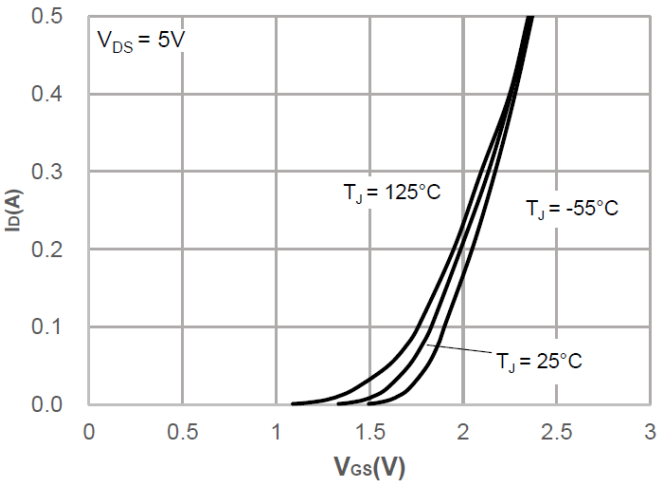


Figure 6. Typical Transfer Characteristics

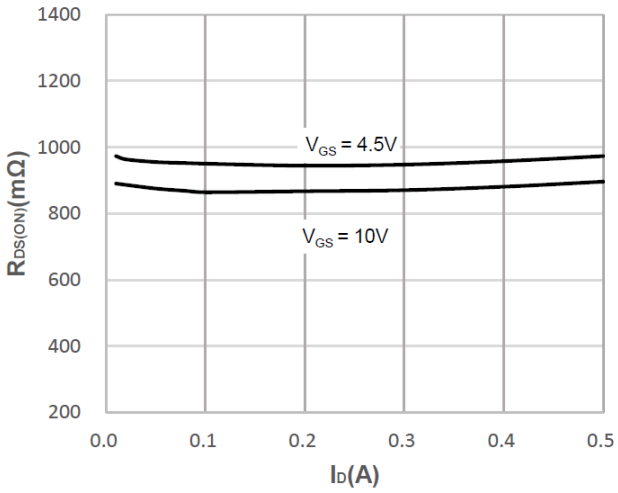


Figure 7. On-resistance vs. Drain Current

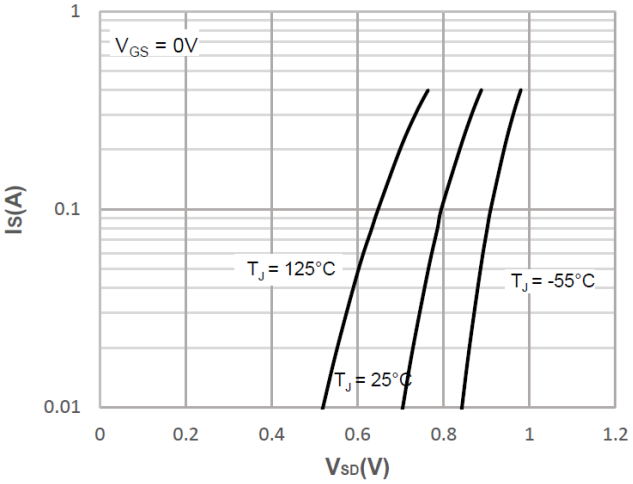


Figure8. Body Diode Characteristics

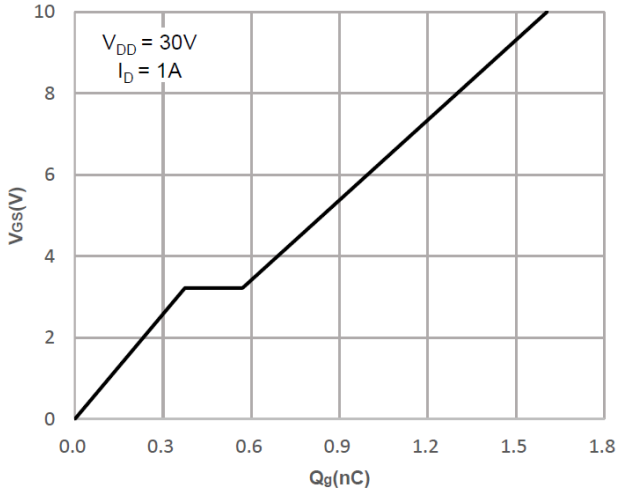


Figure 9. Gate Charge Characteristics

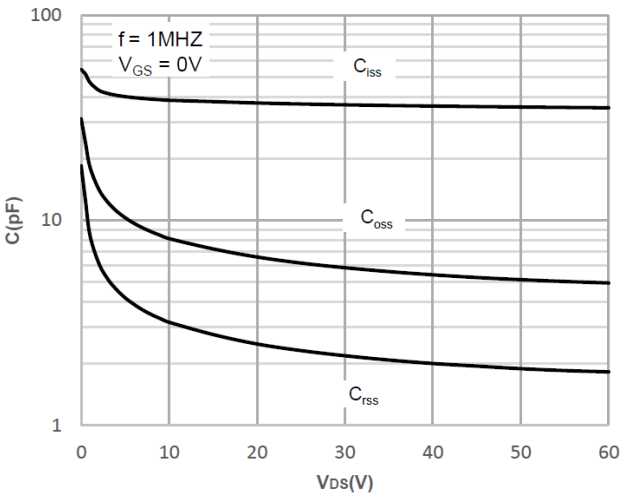


Figure 10. Capacitance Characteristics

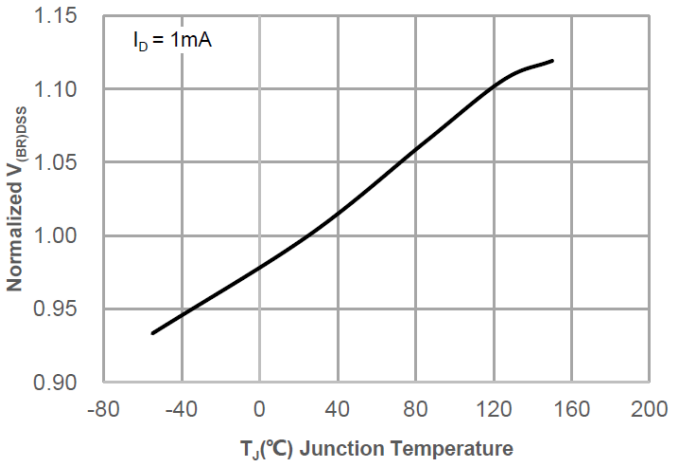


Figure11. Normalized Breakdown voltage vs. Junction Temperature

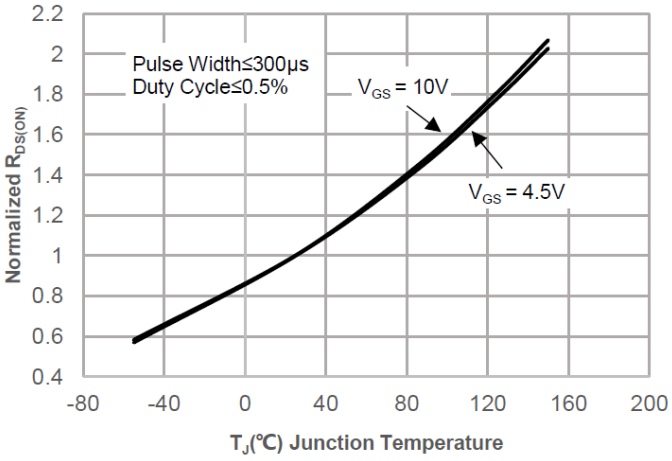


Figure 12. Normalized on Resistance vs. Junction Temperature

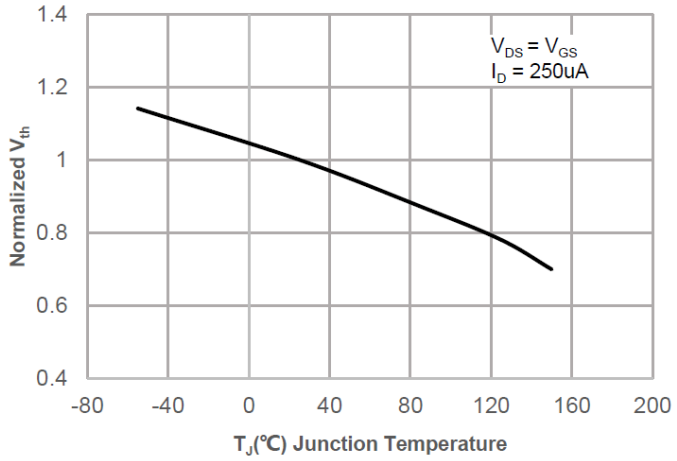


Figure 13. Normalized Threshold Voltage vs. Junction Temperature

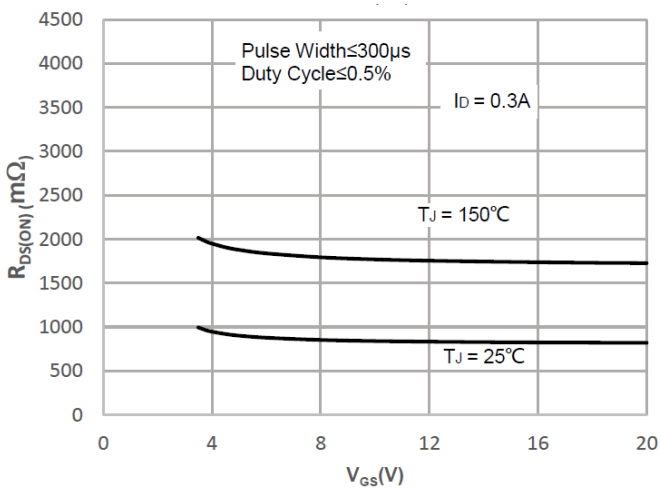


Figure14. $R_{DS(ON)}$ vs. V_{GS}

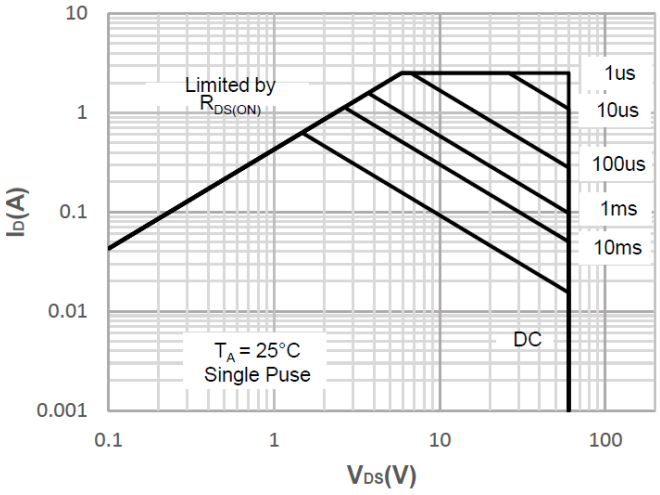
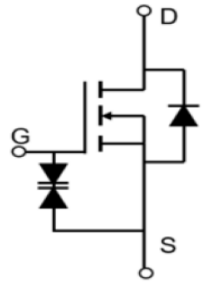
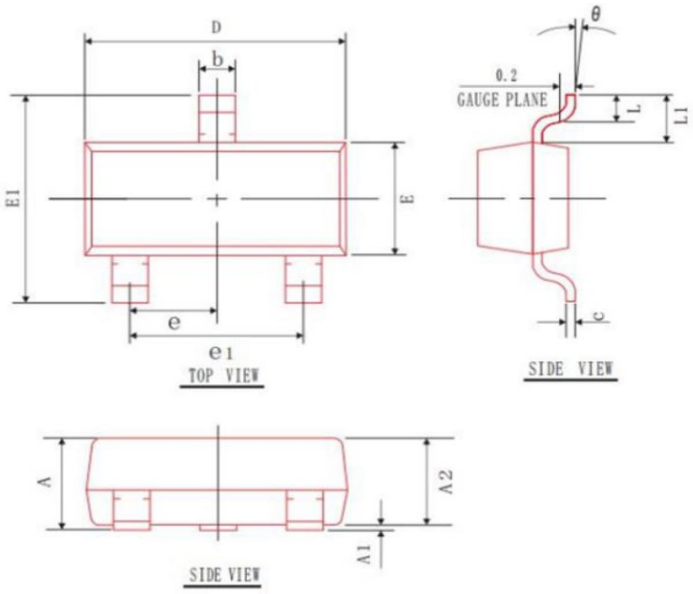


Figure 15. Maximum Safe Operating Area

• Circuit diagram



• Package outlines : Dimensions in (mm)



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	0.90	1.05	1.20
A1	0.00	0.05	0.10
A2	0.90	1.00	1.10
b	0.30	0.40	0.50
c	0.08	0.10	0.15
D	2.80	2.90	3.00
E	1.20	1.30	1.40
E1	2.30	2.40	2.50
L	0.30	0.40	0.50
θ	0°	5°	10°
L1	0.55 REF		
e	0.95 BSC		
e1	1.90 REF		

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